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compound. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### RESPONSE

Applicant respectfully traverses the rejection of claims 1-16.

First and foremost, Applicant notes the above-mentioned U.S. Patent Application has matured into U.S. Patent 7,098,164, the claims of which are submitted herein as Attachment B.

The doctrine of double patenting seeks to prevent the unjustified extension of patent exclusivity beyond the term of a patent. The public policy behind this doctrine is that:

The public should. . . be able to act on the assumption that upon the expiration of the patent it will be free to use not only the invention claimed in the patent but also modifications or variants which would have been obvious to those of ordinary skill in the art at the time the invention was made, taking into account the skill in the art and prior art other than the invention claim in the issued patent.

*In re Zickendraht*, 319 F.2d 225, 232, 138 USPQ 22, 27 (CCPA 1963) (Rich, J., concurring).

When a double patenting rejection is appropriate, it must be based either on statutory grounds or nonstatutory grounds. The

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ground of rejection employed depends upon the relationship of the inventions being claimed. Generally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.

Where the claims of an application are substantively the same as those of a first patent, they are barred under 35 U.S.C. 101 - the statutory basis for a double patenting rejection. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ...." Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957). Where the claims of an application are not the "same" as those of a first patent, but the grant of a patent with the claims in the application would unjustly extend the rights granted by the first patent, a double patenting rejection under nonstatutory grounds is proper.

In determining whether a proper basis exists to enter a double patenting rejection, the examiner must determine the following:

(A) Whether a double patenting rejection is prohibited by the third sentence of 35 U.S.C. 121 (see MPEP § 804.01; if such a prohibition applies, a double patenting rejection cannot be made);

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- (B) Whether a statutory basis exists; and
- (C) Whether a nonstatutory basis exists.

Domination and double patenting should not be confused. They are two separate issues. One patent or application "dominates" a second patent or application when the first patent or application has a broad or generic claim which fully encompasses or reads on an invention defined in a narrower or more specific claim in another patent or application. Domination by itself, i.e., in the absence of statutory or nonstatutory double patenting grounds, cannot support a double patenting rejection. *In re Kaplan*, 789 F.2d 1574, 1577-78, 229 USPQ 678, 681 (Fed. Cir. 1986); and *In re Sarrett*, 327 F.2d 1005, 1014-15, 140 USPQ 474, 482 (CCPA 1964). See MPEP § 804 II.

A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); and *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any claim in the application define an invention that is anticipated by, or is merely an obvious variation of, an invention claimed in the

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patent? If the answer is yes, then an "obviousness-type" nonstatutory double patenting rejection may be appropriate. Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter is not patentably distinct from the subject matter claimed in a commonly owned patent, or a non-commonly owned patent but subject to a joint research agreement as set forth in 35 U.S.C. 103(c)(2) and (3), when the issuance of a second patent would provide unjustified extension of the term of the right to exclude granted by a patent. See *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 58 USPQ2d 1869 (Fed. Cir. 2001); *Ex parte Davis*, 56 USPQ2d 1434, 1435-36 (Bd. Pat. App. & Inter. 2000).

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. 103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

- (A) Determine the scope and content of a patent claim relative to a claim in the application at issue;
- (B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;

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- (C) Determine the level of ordinary skill in the pertinent art; and
- (D) Evaluate any objective indicia of nonobviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Additionally, any obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent.

Moreover, when considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. (Emphasis added) General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992).

With respect to the current rejection, currently pending claims 1-10 are directed towards catalyst components; claims 11-14 are directed towards a catalyst; and claims 15-16 are directed towards a

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process. All currently pending claims (i.e., claims 1-16) are submitted herewith as Attachment A.

With respect to U.S. Patent 7,098,164, claims 1-14 and 17-19 are directed towards a process; and claims 15-16 are directed towards a catalyst. As stated *supra*, claims 1-19 of U.S. Patent 7,098,164 are attached herewith as Attachment B.

Currently pending claims 1-10:

Claim 1 of the current application recites,

Catalyst components for polymerizing olefins comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4.

Applicant believes none of claims 1-19 in U.S. Patent 7,098,164 recite the same, or an obvious variant, of currently pending claim 1. Additionally, currently pending claims 2-10 depend directly or indirectly from currently pending claim 1, and necessarily include all of the limitations therein.

As such, Applicant believes claims 1-10 are patentably distinct from claims 1-19 in U.S. Patent 7,098,164.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would

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have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

The Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent 7,098,164, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the cited patent. See MPEP §804 (1).

Currently pending claims 11-14:

Claim 11 of the current application recites,

A catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium

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is in a valence state lower than 4, with (ii) an organoaluminum compound.

Applicant believes none of claims 1-19 in U.S. Patent 7,098,164 recite the same, or an obvious variant, of currently pending claim 11. Additionally, currently pending claims 12-14 depend directly or indirectly from currently pending claim 11, and necessarily include all of the limitations therein.

As such, Applicant believes claims 11-14 are patentably distinct from claim 1-19 in U.S. Patent 7,098,164.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c) in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

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In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent 7,098,164, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the patent. See MPEP §804 (1).

Currently pending claims 15-16:

Claim 15 of the current application recites,

A process for (co)polymerizing olefins of formula (II)  
 $\text{CH}_2=\text{CHR}^{\text{VIII}}$  (II)

where  $R^{\text{VIII}}$  is H or a C<sub>1</sub>-C<sub>12</sub> hydrocarbon group, carried out in presence of a catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4; with (ii) an organoaluminum compound.

Applicant believes none of claims 1-19 in U.S. Patent 7,098,164 recite the same, or an obvious variant, of currently pending claim 15. Additionally, currently pending claim 16 depends directly from currently pending claim 15, and necessarily includes all of the limitations therein.

As such, Applicant believes claims 15-16 are patentably distinct from claims 1-19 in U.S. Patent 7,098,164.

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Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant respectfully believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant traverses the currently pending rejection since Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent 7,098,164, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an

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obvious variation of, the invention defined in a claim or claims in the patent. See MPEP §804 (1).

Accordingly, as discussed *supra*, Applicant believes the currently pending claims are not anticipated by, or an obvious variant of the allowed claims in U.S. Patent 7,098,164. As such, Applicant believes the currently pending claims are patentably distinct from the allowed claims in U.S. Patent 7,098,164.

In light of the above, Applicant respectfully requests the Examiner to withdraw the currently pending double patenting rejection, and allow claims 1-16.

#### 2. Double Patenting Rejection

The Office Action states,

Claims 15 and 16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-9 of copending Application No. 10/503,104. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim a process for the polymerization of olefins (ethylene), which is contacted with a catalyst comprising Mg, Ti, aluminum and diether compound. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

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**RESPONSE**

Applicant respectfully traverses the rejection of claims 15-16.

The doctrine of double patenting seeks to prevent the unjustified extension of patent exclusivity beyond the term of a patent. The public policy behind this doctrine is that:

The public should. . . be able to act on the assumption that upon the expiration of the patent it will be free to use not only the invention claimed in the patent but also modifications or variants which would have been obvious to those of ordinary skill in the art at the time the invention was made, taking into account the skill in the art and prior art other than the invention claim in the issued patent.

*In re Zickendraht*, 319 F.2d 225, 232, 138 USPQ 22, 27 (CCPA 1963) (Rich, J., concurring).

When a double patenting rejection is appropriate, it must be based either on statutory grounds or nonstatutory grounds. The ground of rejection employed depends upon the relationship of the inventions being claimed. Generally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. 103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35

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U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

- (A) Determine the scope and content of a patent claim relative to a claim in the application at issue;
- (B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;
- (C) Determine the level of ordinary skill in the pertinent art; and
- (D) Evaluate any objective indicia of nonobviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Additionally, any obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent.

Moreover, when considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the

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patent may not be used as prior art. (Emphasis added) General Foods Corp. v. Studiengesellschaft Kohle mbH, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992).

With respect to the current rejection, currently pending claims 15-16 are directed towards a process.

With respect to U.S. Patent Application Serial No. 10/503,104, claims 1-6 are directed towards a process; and claims 7-9 are directed towards a solid catalyst component. Claims 1-9 of U.S. Patent Application Serial No. 10/503,104 are submitted herewith as Attachment C.

Currently pending claims 15-16:

Claim 15 of the current application recites,

A process for (co)polymerizing olefins of formula (II)  
$$\text{CH}_2=\text{CHR}^{\text{VIII}} \quad (\text{II})$$

where  $\text{R}^{\text{VIII}}$  is H or a  $\text{C}_1\text{-}\text{C}_{12}$  hydrocarbon group, carried out in presence of a catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a  $\text{C}_1\text{-}\text{C}_{10}$  alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4; with (ii) an organoaluminum compound.

Applicant believes none of claims 1-9 in U.S. Patent Application Serial No. 10/503,104 recite the same, or an obvious variant, of currently pending claim 15. Additionally, currently pending claim 16 depends directly from currently pending claim 15, and necessarily includes all of the limitations therein.

As such, Applicant believes claims 15-16 are patentably

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distinct from claims 1-9 in U.S. Patent Application Serial No. 10/503,104.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the referred patent application. See MPEP §804 (1).

The Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c) in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant respectfully believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant traverses the currently pending rejection since Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the pending claims in U.S. Patent Application 10/503,104, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or

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would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Accordingly, as discussed *supra*, Applicant believes currently pending claims 15-16 are not anticipated by, or an obvious variant of pending claims 1-9 in U.S. Patent Application 10/503,104. As such, Applicant believes the currently pending claims are patentably distinct from pending claims 1-9 in U.S. Patent Application 10/503,104.

In light of the above, Applicant respectfully requests the Examiner to withdraw the currently pending double patenting rejection, and allow claims 15-16.

### 3. Double Patenting Rejection

The Office Action states,

Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over allowed claims 23-44 of copending Application No. 10/493,636. Although the conflicting claims are not identical, they are not patentably distinct from each other because each of the components claimed in the instant application are claimed by their full formulaic form in the copending application. The Ti adduct is found in the metallocene of the copending application and the OR, Cl and Mg can be found in the magnesium compound  $MgCl_2m(ROH)$  adduct in the copending application. An ether electron donor is also disclosed as well as an aluminum alkyl compound. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have

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similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

**RESPONSE**

Applicant respectfully traverses the rejection of claims 1-16.

The doctrine of double patenting seeks to prevent the unjustified extension of patent exclusivity beyond the term of a patent. The public policy behind this doctrine is that:

The public should. . . be able to act on the assumption that upon the expiration of the patent it will be free to use not only the invention claimed in the patent but also modifications or variants which would have been obvious to those of ordinary skill in the art at the time the invention was made, taking into account the skill in the art and prior art other than the invention claim in the issued patent.

*In re Zickendraht*, 319 F.2d 225, 232, 138 USPQ 22, 27 (CCPA 1963) (Rich, J., concurring).

When a double patenting rejection is appropriate, it must be based either on statutory grounds or nonstatutory grounds. The ground of rejection employed depends upon the relationship of the inventions being claimed. Generally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C.

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103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

- (A) Determine the scope and content of a patent claim relative to a claim in the application at issue;
- (B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;
- (C) Determine the level of ordinary skill in the pertinent art; and
- (D) Evaluate any objective indicia of nonobviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Additionally, any obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent.

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Moreover, when considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. (Emphasis added) *General Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992).

With respect to the current rejection, currently pending claims 1-10 are directed towards catalyst components; claims 11-14 are directed towards a catalyst; and claims 15-16 are directed towards a process.

With respect to U.S. Patent Application Serial No. 10/493,636, claims 23-35 and 44 are directed towards an adduct; claims 36-39 are directed towards a catalyst component; claims 40-42 are directed towards a catalyst; and claim 43 is directed towards a process. Claims 23-44 of U.S. Patent Application Serial No. 10/493,636 are submitted herewith as Attachment D.

Currently pending claims 1-10:

Claim 1 of the current application recites,

Catalyst components for polymerizing olefins comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4.

Applicant believes none of claims 23-44 in U.S. Patent Application Serial No. 10/493,636 recite the same, or an obvious variant, of currently pending claim 1. Additionally, currently

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pending claims 2-10 depend directly or indirectly from currently pending claim 1, and necessarily include all of the limitations therein.

As such, Applicant believes claims 1-10 are patentably distinct from claims 23-44 in U.S. Patent Application Serial No. 10/493,636.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the referred patent application. See MPEP §804 (1).

The Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the currently pending claims in U.S. Patent Application Serial No. 10/493,636, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B)

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the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Currently pending claims 11-14:

Claim 11 of the current application recites,

A catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4, with (ii) an organoaluminum compound.

Applicant believes none of claims 23-44 in U.S. Patent Application Serial No. 10/493,636 recite the same, or an obvious variant, of currently pending claim 11. Additionally, currently pending claims 12-14 depend directly or indirectly from currently pending claim 11, and necessarily include all of the limitations therein.

As such, Applicant believes claims 11-14 are patentably distinct from claims 23-44 in U.S. Patent Application Serial No. 10/493,636.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the

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invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the referred patent application. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c) in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the pending claims in U.S. Patent Application Serial No. 10/493,636, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Currently pending claims 15-16:

Claim 15 of the current application recites,

A process for (co)polymerizing olefins of formula (II)  
 $\text{CH}_2=\text{CHR}^{\text{VIII}}$  (II)

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where R<sup>VIII</sup> is H or a C<sub>1</sub>-C<sub>12</sub> hydrocarbon group, carried out in presence of a catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4; with (ii) an organoaluminum compound.

Applicant believes none of claims 23-44 in U.S. Patent Application Serial No. 10/493,636 recite the same, or an obvious variant, of currently pending claim 15. Additionally, currently pending claim 16 depends directly from currently pending claim 15, and necessarily includes all of the limitations therein.

As such, Applicant believes claims 15-16 are patentably distinct from claims 23-44 in U.S. Patent Application Serial No. 10/493,636.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) The differences between the inventions defined by the conflicting claims; and (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A) (4) (c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability

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purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant respectfully believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant traverses the currently pending rejection since Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent Application Serial No. 10/493,636, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Accordingly, as discussed *supra*, Applicant believes the currently pending claims are not anticipated by, or an obvious variant of pending claims 23-44 in U.S. Patent Application Serial No. 10/493,636. As such, Applicant believes the currently pending claims are patentably distinct from pending claims 23-44 in U.S. Patent Application Serial No. 10/493,636.

In light of the above, Applicant respectfully requests the Examiner to withdraw the currently pending double patenting rejection, and allow claims 1-16.

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4. Double Patenting Rejection

The Office Action states,

Claims 1-16 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over allowed claims 1-15 and 22-25 of copending Application No. 10/362,695. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim a catalyst component comprising a magnesium compound, titanium compound, an electron donor comprising ethers and an aluminum alkyl compound and process for the polymerization of olefins. A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

**RESPONSE**

Applicant respectfully traverses the rejection of claims 1-16.

The doctrine of double patenting seeks to prevent the unjustified extension of patent exclusivity beyond the term of a patent. The public policy behind this doctrine is that:

The public should. . . be able to act on the assumption that upon the expiration of the patent it will be free to use not only the invention claimed in the patent but also modifications or variants which would have been obvious to those of ordinary skill in the art at the time the invention was made, taking into account the skill in the art and prior art other than the invention claim in the issued patent.

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*In re Zickendraht*, 319 F.2d 225, 232, 138 USPQ 22, 27 (CCPA 1963) (Rich, J., concurring).

When a double patenting rejection is appropriate, it must be based either on statutory grounds or nonstatutory grounds. The ground of rejection employed depends upon the relationship of the inventions being claimed. Generally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. 103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

- (A) Determine the scope and content of a patent claim relative to a claim in the application at issue;
- (B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;
- (C) Determine the level of ordinary skill in the pertinent art; and
- (D) Evaluate any objective indicia of nonobviousness.

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The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Additionally, any obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent.

Moreover, when considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. (Emphasis added) *General Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992).

With respect to the current rejection, currently pending claims 1-10 are directed towards catalyst components; claims 11-14 are directed towards a catalyst; and claims 15-16 are directed towards a process.

With respect to claims 1-15 and 22-25 of co-pending U.S. Patent Application Serial No. 10/362,695, claims 1-15 are directed towards a catalyst component; claims 22-24 are directed towards a catalyst;

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and claim 25 is directed towards a process. Claims 1-15 and 22-15 of U.S. Patent Application Serial No. 10/362,695 are submitted herewith as Attachment E.

Currently pending claims 1-10:

Claim 1 of the current application recites,

Catalyst components for polymerizing olefins comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4.

Applicant believes none of claims 1-15 or 22-25 in U.S. Patent Application Serial No. 10/362,695 recite the same, or an obvious variant, of currently pending claim 1. Additionally, currently pending claims 2-10 depend directly or indirectly from currently pending claim 1, and necessarily include all of the limitations therein.

As such, Applicant believes claims 1-10 are patentably distinct from claims 1-15 and 22-25 in U.S. Patent Application Serial No. 10/362,695.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

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The Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A) (4)(c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the pending claims in U.S. Patent Application Serial No. 10/362,695, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Currently pending claims 11-14:

Claim 11 of the current application recites,

A catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4, with (ii) an organoaluminum compound..

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Applicant believes none of claims 1-15, or 22-25, in U.S. Patent Application Serial No. 10/362,695 recite the same, or an obvious variant, of currently pending claim 11. Additionally, currently pending claims 12-14 depend directly or indirectly from currently pending claim 11, and necessarily include all of the limitations therein.

As such, Applicant believes claims 11-14 are patentably distinct from claim 1-15 and 22-25 in U.S. Patent Application Serial No. 10/362,695.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c) in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

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In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the pending claims in U.S. Patent Application Serial No. 10/362,695, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application.

See MPEP §804 (1).

Currently pending claims 15-16:

Claim 15 of the current application recites,

A process for (co)polymerizing olefins of formula (II)  
$$\text{CH}_2=\text{CHR}^{\text{VIII}} \quad (\text{II})$$

where  $\text{R}^{\text{VIII}}$  is H or a  $\text{C}_1\text{-}\text{C}_{12}$  hydrocarbon group, carried out in presence of a catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a  $\text{C}_1\text{-}\text{C}_{10}$  alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4; with (ii) an organoaluminum compound.

Applicant believes none of claims 1-15, or claims 22-25, in U.S. Patent Application Serial No. 10/362,695 recite the same, or an obvious variant, of currently pending claim 15. Additionally, currently pending claim 16 depends directly from currently pending claim 15, and necessarily includes all of the limitations therein.

As such, Applicant believes claims 15-16 are patentably

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distinct from claims 1-15 and 22-25 in U.S. Patent Application Serial No. 10/362,695.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the pending claims in U.S. Patent Application Serial No. 10/362,695, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated

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by, or would have been an obvious variation of, the invention defined in a claim or claims in the referred patent application. See MPEP §804 (1).

Accordingly, as discussed *supra*, Applicant believes the currently pending claims are not anticipated by, or an obvious variant of pending claims 1-15 or 22-25 in U.S. Patent Application Serial No. 10/362,695. As such, Applicant believes the currently pending claims are patentably distinct from pending claims 1-15 and 22-25 in U.S. Patent Application Serial No. 10/362,695.

In light of the above, Applicant respectfully requests the Examiner to withdraw the currently pending double patenting rejection, and allow claims 1-16.

#### 5. Double Patenting Rejection

The Office Action states,

Claims 15 and 16 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 7,019,097. Although the conflicting claims are not identical, they are not patentably distinct from each other because both claim a process for polymerizing ethylene with an olefin having a hydrocarbon radical with 1-12 carbon atoms in the presence of a catalyst system comprising Mg, halogen (includes Cl), ether, Ti and an aluminum compound wherein the oxidation state of Ti is less than 4+ and the weight percentages of each of the components are overlapping with the instant claims. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have

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similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

Applicants should note that the above obviousness type double patenting rejection over US Patent No. 7,019,907 was a provisional obviousness type double patenting rejection over copending Application No. 10/471,497 in the previous Office Action dated December 16, 2005 but has been changed to an obviousness type double patenting rejection since the above copending application has now become a patent.

**RESPONSE**

Applicant has submitted a Terminal Disclaimer to U.S. Patent 7,019,907 herein. Accordingly, Applicant respectfully requests the Examiner to withdraw this rejection.

**CONCLUSION**

Based upon the above remarks, the presently claimed subject matter is believed to be novel and patentably distinguishable over the references of record. The Examiner is therefore respectfully requested to reconsider and withdraw all rejections and allow all pending claims 1-16. Favorable action with an early allowance of the claims pending in this application is earnestly solicited.

The Examiner is welcomed to telephone the undersigned practitioner with any questions or comments.

Jan-18-07 16:00

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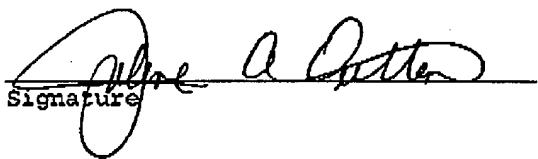
Respectfully submitted,

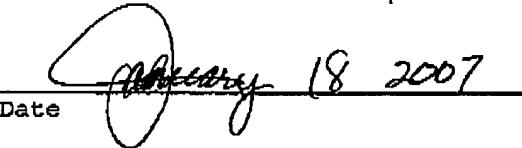
By:

  
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I hereby certify that this correspondence is being facsimile transmitted to the U.S. Patent and Trademark Office (Fax. No. 571-273-8300) on January 18 2007.

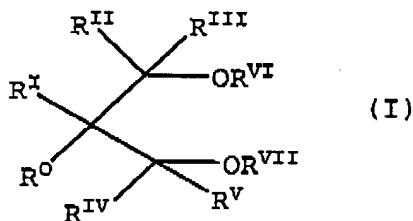
  
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Date

ATTACHMENT A

1. (previously presented): Catalyst components for polymerizing olefins comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4.

2. (previously presented): The catalyst components according to claim 1 in which the ether having at least two ether groups is selected from 1,3 diethers of formula (I):



wherein R<sup>0</sup>, R<sup>I</sup>, R<sup>II</sup>, R<sup>III</sup>, R<sup>IV</sup> and R<sup>V</sup>, equal to or different from each other, are hydrogen or hydrocarbon radicals having from 1 to 18 carbon atoms, and R<sup>VI</sup> and R<sup>VII</sup>, equal to or different from each other, are hydrocarbon radicals having from 1 to 18 carbon atoms; one or more of R<sup>0</sup>-R<sup>VII</sup> can be linked to form a cycle.

3. (previously presented): The catalyst components according to claim 2 in which R<sup>VI</sup> and R<sup>VII</sup> are selected from C<sub>1</sub>-C<sub>4</sub> alkyl radicals.

4. (previously presented): The catalyst components according to claim 2 in which the radicals R<sup>II</sup>-R<sup>V</sup> are hydrogen, the radicals R<sup>VI</sup> and R<sup>VII</sup> are C<sub>1</sub>-C<sub>4</sub> alkyl radicals, and the radicals R<sup>0</sup> and R<sup>1</sup>, equal to or different from each other, are C<sub>1</sub>-C<sub>18</sub> alkyl groups, C<sub>3</sub>-C<sub>18</sub> cycloalkyl groups, C<sub>6</sub>-C<sub>18</sub> aryl groups, or C<sub>7</sub>-C<sub>18</sub> alkylaryl or arylalkyl groups.

5. (previously presented): The catalyst components according to claim 4 in which R<sup>0</sup> and R<sup>1</sup> are C<sub>1</sub>-C<sub>10</sub> linear or branched alkyls.

6. (previously presented): The catalyst components according to claim 1 in which the ether having at least two ether groups is a 1,2 diether.

7. (previously presented): The catalyst component according to claim 1 in which the Mg/Ti weight ratio is lower than 2, the Cl/Ti weight ratio is from 2 to 5.5, and the OR/Ti weight ratio is from 0.7 to 3.

8. (previously presented): The catalyst components according to claim 1 in which at least 60% of the titanium is in a valence state lower than 4.

9. (previously presented): The catalyst components according to claim 7 in which the Mg/Ti weight ratio is lower than 1.5, the Cl/Ti weight ratio is from 2.5 to 5, and the OR/Ti weight ratio is from 0.7 to 2.5.

10. (previously presented): The catalyst components according to claim 8 in which at least 70% of the titanium is in a valence state lower than 4.

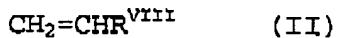
11. (previously presented): A catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4, with (ii) an organoaluminum compound.

12. (Original): The catalyst according to claim 11 in which the organoaluminum compound is selected from trialkyl aluminum compounds.

13. (previously presented): The catalyst according to claim 11 in which the organoaluminum compound is selected from mixtures of trialkylaluminum and alkylaluminum halides.

14. (previously presented): The catalyst according to claim 13 in which the alkylaluminum halide is selected from diethylaluminum chloride, diisobutylaluminum chloride, Alsesquichloride, and dimethylaluminum chloride.

15. (previously presented): A process for (co)polymerizing olefins of formula (II)



where R<sup>VIII</sup> is H or a C<sub>1</sub>-C<sub>12</sub> hydrocarbon group, carried out in presence of a catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more

ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4; with (ii) an organoaluminum compound.

16. (previously presented): The process according to claim 15 in which the olefins are ethylene and one or more alpha-olefins having from 3 to 12 carbon atoms.

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TABLE 4

Ex.	Cat. mg	3-Carene mmoli:	% molar	Yield Kg/great	Melt Index dg/min		1-C <sub>4</sub> - wt. %	D. S. C. Tm °C.
					E	N/E		
Comp. Ex 9	15.2	0	0	11.8	15.6	35.6	13.9	122.0
11	24.7	8.8	0.18	10.5	1.7	26.9	6.6	124.4

\*referred to the total olefin present in the reactor

From the data reported in the table, clearly appears that the use of 3-carene produce polymer with higher molecular weight (i.e. lower value of the melt index).

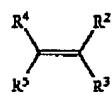
The invention claimed is:

1. A process for (co)polymerizing olefins of formula CH<sub>2</sub>=CHR wherein R is hydrogen, methyl, or ethyl, carried out in presence of a catalyst system in a reactor comprising:

- (a) solid catalyst component comprising a compound of Ti or V not containing Metal-π bonds, Mg, halogen and optionally an electron donor compound;
- (b) an Al-alkyl compound; and
- (c) at least one non-polymerizing olefin an amount from 0.0005% by mol to 0.45% by mol with respect to a total olefins amount in the reactor.

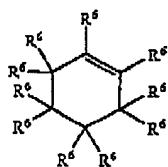
2. The process according to claim 1, wherein the amount of non-polymerizing olefin ranges from 0.001% by mol to 0.30% by mol with respect to the total olefins amount in the reactor.

3. The process according to claim 1, wherein the non-polymerizing olefins have formula (I):



wherein R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup>, equal to or different from each other, are hydrogen, or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>1</sub>-C<sub>20</sub> alkenyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl or C<sub>7</sub>-C<sub>20</sub> arylalkyl; optionally two groups R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> can join to form a C<sub>3</sub>-C<sub>7</sub> membered aliphatic ring that can optionally bear C<sub>1</sub>-C<sub>20</sub> alkyl substituents, with the proviso that at least two of the group consisting of R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, R<sup>5</sup> are different from hydrogen.

4. The process according to claim 3, wherein the non-polymerizing olefins have formula (II):



wherein R<sup>6</sup>, equal to or different from each other, are hydrogen, or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>1</sub>-C<sub>20</sub> alkenyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl or C<sub>7</sub>-C<sub>20</sub> arylalkyl; wherein two R<sup>6</sup>

groups can optionally join to form a C<sub>3</sub>-C<sub>7</sub> membered aliphatic ring that can optionally bear C<sub>1</sub>-C<sub>20</sub> alkyl substituents.

13 5. The process according to claim 3, wherein the non-polymerizing olefin is 2,3-dimethyl-butene-2-one, 1-methylcyclohexene, beta-pinene, limonene, alpha-pinene, 2-carene or 3-carene.

20 6. The process according to claim 5, wherein the non-polymerizing olefin is 3-carene.

7. The process according to claim 1, wherein the olefins of formula CH<sub>2</sub>=CHR are propylene and 1-butene.

8. The process according to claim 1, wherein the solid catalyst component (a) comprises a compound of Ti selected from TiCl<sub>4</sub>, TiCl<sub>3</sub> or Li(OR<sup>7</sup>)<sub>n</sub>X<sub>y</sub>, wherein n is a valence of titanium, y is a number between 1 and n, and R<sup>7</sup> is a hydrocarbon containing up to 15 carbon atoms or —COR<sup>8</sup>, R<sup>8</sup> is a hydrocarbon containing up to 15 carbon atoms and X is a halogen, supported on Mg dihalide.

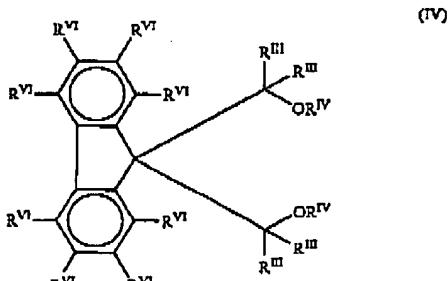
30 9. The process according to claim 1, wherein the solid catalyst component (a) further comprises an internal electron donor.

10. The process according to claim 9, wherein the internal electron donor compound is an ether, an ester, an amine, or a ketone.

35 11. The process according to claim 10, wherein the internal electron donor compound is selected from alkyl, cycloalkyl, or aryl esters of aliphatic or aromatic mono or polycarboxylic acids and 1,3-diethers.

40 12. The process according to claim 11, wherein the internal electron donor compound is selected from benzoates, phthalates, and succinates.

13. The process according to claim 11, wherein the internal electron donor compound is selected from 1,3-diethers of formula (IV):



50 where R<sup>7</sup>, equal to or different from each other, are hydrogen, a halogen, a C<sub>1</sub>-C<sub>20</sub> alkyl, a linear or branched, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl and C<sub>7</sub>-C<sub>20</sub> arylalkyl, optionally containing at least one heteroatom selected from the group consisting of N, O, S, P, Si, and

## US 7,098,164 B2

**15**

halogens, as substitutes for carbon or hydrogen atoms, or both; R<sup>II</sup>, equal to or different from each other, are hydrogen or a C1-C20 hydrocarbon; and R<sup>IV</sup>, equal to or different from each other, are a C1-C20 hydrocarbon.

14. The process according to claim 13, wherein R<sup>IV</sup> is methyl.

15. A catalyst for (co)polymerizing olefins of formula CH<sub>2</sub>=CHR wherein R is hydrogen, methyl, or ethyl comprising:

- (a) a solid catalyst component comprising a compound of Ti or V not containing Metal-π bonds, Mg, and halogen;
- (b) an Al-alkyl compound; and
- (c) at least one non-polymerizing olefin;

**16**

wherein a molar ratio of non-polymerizing olefin/titanium is lower than 100.

16. The catalyst according to claim 15, wherein the molar ratio is lower than 80.

17. The process of claim 13, wherein R<sup>IV</sup> is selected from Cl and F.

18. The process of claim 13, wherein the heteroatom is selected from Cl and F.

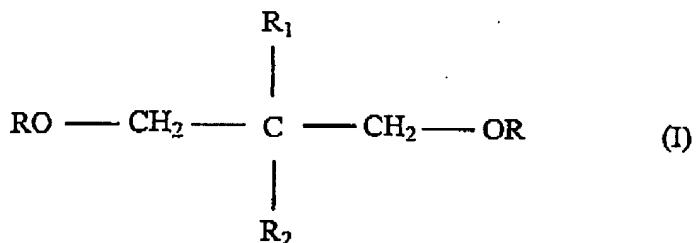
19. The process of claim 3, wherein at least three of the group consisting of R<sup>2</sup>, R<sup>3</sup>, R<sup>4</sup>, and R<sup>5</sup> are different from hydrogen.

\* \* \* \* \*

U.S. Patent Application Serial No.: 10/503,104  
FE 6024

ATTACHMENT C

1. (original) A process for the preparation of ethylene copolymers comprising the copolymerization of ethylene with olefins  $\text{CH}_2=\text{CHR}$ , in which R is a hydrocarbyl radical with 1-12 carbon atoms carried out in the presence of a catalyst comprising the product obtained by contacting (i) a solid catalyst component comprising Mg, Ti, halogen and a 1,3-diether of formula (I)



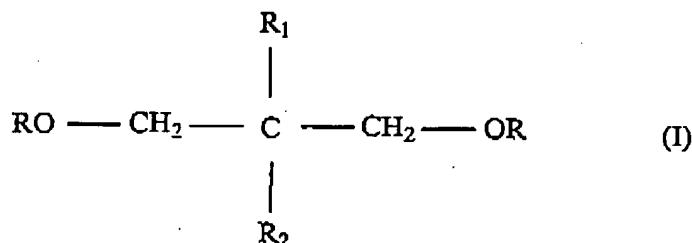
in which R is a  $\text{C}_1\text{-}\text{C}_{10}$  hydrocarbon group,  $\text{R}_1$  is methyl or ethyl, optionally containing a heteroatom, and  $\text{R}_2$  is a  $\text{C}_4\text{-}\text{C}_{12}$  linear alkyl group optionally containing a heteroatom, and (ii) an organo-Al compound.

2. (original) The process according to claim 1 in which R is a  $\text{C}_1\text{-}\text{C}_5$  alkyl group,  $\text{R}_1$  is methyl and  $\text{R}_2$  is a  $\text{C}_7\text{-}\text{C}_{10}$  linear alkyl group.

3. (original) The process according to claim 1 in which the 1,3-diether is 2-methyl-2-pentyl-1,3-dimethoxypropane, 2-methyl-2-n-hexyl-1,3-dimethoxypropane, 2-n-heptyl-2-methyl-1,3-dimethoxypropane, 2-n-octyl-2-methyl-1,3-dimethoxypropane, 2-n-decyl-2-methyl-1,3-dimethoxypropane, 2-ethyl-2-butyl-1,3-dimethoxypropane, 2-ethyl-2-pentyl-1,3-dimethoxypropane, 2-ethyl-2-n-hexyl-1,3-dimethoxypropane,

2-n-heptyl-2-ethyl-1,3-dimethoxypropane, 2-n-octyl-2-ethyl-1,3-dimethoxypropane, or 2-n-decyl-2-ethyl-1,3-dimethoxypropane.

4. (previously presented) The process according to claim 1 in which the solid catalyst component (i) comprises a titanium compound containing at least one Ti-halogen bond, and an internal electron-donor compound of formula (I) supported on magnesium halide.
5. (previously presented) The process according to claim 4 in which Mg-halide is in active form and the titanium compound is a titanium halide or a titanium compound of formula  $TiX_n(OR^4)_{4-n}$ , where  $0 \leq n \leq 3$ , X is halogen, and  $R^4$  is a  $C_1-C_{10}$  hydrocarbon group.
6. (original) The process according to claim 5 in which the titanium compound is selected from titanium tetrachloride and  $TiCl_3 OR$ , where R is a  $C_1-C_{10}$  hydrocarbon radical.
7. (previously presented) A solid catalyst component comprising Mg, Ti, halogen and a 1,3-diether of formula (I):



in which R is a  $C_1-C_{10}$  alkyl group,  $R_1$  is methyl or ethyl, optionally containing a heteroatom, and  $R_2$  is a  $C_4-C_{12}$  linear alkyl group optionally containing a heteroatom with

the proviso that when R<sub>1</sub> is ethyl, R<sub>2</sub> is higher than C4.

8. (original) The solid catalyst component according to claim 7 in which R is a C1-C5 alkyl group, R<sub>1</sub> is methyl and R<sub>2</sub> is a C7-C10 linear alkyl group.

9. (original) The solid catalyst component according to claim 7 in which the 1,3-diether is 2-methyl-2-pentyl-1,3-dimethoxypropane, 2-methyl-2-n-hexyl-1,3-dimethoxypropane, 2-n-heptyl-2-methyl-1,3-dimethoxypropane, 2-n-octyl-2-methyl-1,3-dimethoxypropane, 2-n-decyl-2-methyl-1,3-dimethoxypropane, 2-ethyl-2-pentyl-1,3-dimethoxypropane, 2-ethyl-2-n-hexyl-1,3-dimethoxypropane, 2-n-heptyl-2-ethyl-1,3-dimethoxypropane, 2-n-octyl-2-ethyl-1,3-dimethoxypropane, or 2-n-decyl-2-ethyl-1,3-dimethoxypropane.

U.S. Patent Application Serial No.: 10/493,636  
FE 6040

ATTACHMENT D

Claims 1 - 22: (Cancelled)

23. (New) An adduct comprising MgCl<sub>2</sub>, an alcohol ROH present in a molar ratio with MgCl<sub>2</sub> defined by the formula MgCl<sub>2</sub>•m(ROH) wherein m is a number from 0.5 to 6 and R is a C<sub>1</sub>-C<sub>10</sub> hydrocarbon group, and a compound containing a transition metal M selected from the Groups 3 to 11 or the lanthanide or actinide groups of the Periodic Table of the Elements (new IUPAC version) in an amount such as to give a weight of transition metal M atoms lower than 10% based on the total weight of the adduct.

24. (New) The adduct according to claim 23 having the formula MgCl<sub>2</sub>•m(ROH)<sub>n</sub>[(Cp)<sub>p</sub>(ZR<sup>1</sup><sub>q</sub>)<sub>r</sub>(A)<sub>s</sub>ML<sub>t</sub>] wherein (ZR<sup>1</sup><sub>q</sub>)<sub>r</sub> is a divalent group bridging Cp and A;

Z is C, Si, Ge, N or P;

R<sup>1</sup> is equal to or different from each other, and is hydrogen or a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl or C<sub>7</sub>-C<sub>20</sub> arylalkyl, or two R<sup>1</sup> can form an aliphatic or aromatic C<sub>4</sub>-C<sub>7</sub> ring;

Cp is a substituted or unsubstituted cyclopentadienyl group, optionally condensed to one or more substituted or unsubstituted, saturated, unsaturated or aromatic rings, containing from 4 to 6 carbon atoms, optionally containing one or more heteroatoms;

A is O, S, NR<sup>2</sup>, PR<sup>2</sup> wherein R<sup>2</sup> is hydrogen, a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl or C<sub>7</sub>-C<sub>20</sub> arylalkyl, or A has the same meaning as Cp;

L are equal to or different from each other, and are monoanionic sigma ligands selected from the group consisting of hydrogen, halogen, R<sup>3</sup>, OR<sup>3</sup>, OCOR<sup>3</sup>, SR<sup>3</sup>, NR<sup>3</sup><sub>2</sub> and PR<sup>3</sup><sub>2</sub>, wherein R<sup>3</sup> is a linear or branched, saturated or unsaturated C<sub>1</sub>-C<sub>20</sub> alkyl, C<sub>3</sub>-C<sub>20</sub> cycloalkyl, C<sub>6</sub>-C<sub>20</sub> aryl, C<sub>7</sub>-C<sub>20</sub> alkylaryl or C<sub>7</sub>-C<sub>20</sub> arylalkyl group, optionally containing one or more Si or Ge atoms; preferably, L are the same;

n is a number such as to give a weight of transition metal M atoms which is lower than 10% based on the total weight of the adduct;

p is 0 or 1;

q is 1 when Z is N or P, and it is 2 when Z is C, Si or Ge;

r is an integer ranging from 0 to 4;

s is 0, 1 or 2; and

t is an integer corresponding to formula v-(p+s) wherein v is an oxidation state of the transition metal M; with the proviso that r is 0 when s is 0.

25. (New) The adduct according to claim 24, wherein n is a number such as to give a weight of transition metal M atoms which is lower than 7%.

26. (New) The adduct according to claim 25, wherein n is a number such as to give a weight of transition metal M atoms which is lower than 5%.

27. (New) The adduct according to claim 26, wherein n is a number such as to give a weight of transition metal M atoms which is lower than 2%.

28. (New) The adduct according to claim 24, wherein p and s are 0 and the adduct has a formula of  $MgCl_2 \bullet m(ROH)_n[M(OR^3)_aX_{b-a}]$  wherein transition metal M is Ti, Zr or V;

a is between 0 and b;

b is a valence of the transition metal M; and

X is halogen.

29. (New) The adduct according to claim 28, wherein n gives a weight of the transition metal M atoms lower than 2%; the transition metal M is Ti; X is chlorine; and R<sup>3</sup> is selected from a linear or branched C1-C10 hydrocarbon.

30. (New) The adduct according to claim 28, wherein  $[M(OR^3)_aX_{b-a}]$  is  $Ti(OBu)_4$ ,  $Ti(OBu)Cl_3$ ,  $Ti(OBu)_2Cl_2$ , or  $Ti(OBu)_3Cl$ .

31. (New) The adduct according to claim 22, wherein the adduct comprises a X-ray diffraction spectrum in which in a range of 2θ diffraction angles between 5° and 50° a characteristic diffraction line of the MgCl<sub>2</sub> is not present.

32. (New) The adduct according to claim 22, wherein the X-ray diffraction spectrum, in the range of 2θ diffraction angles between 5° and 15°, comprises three main diffraction lines present at diffraction angles 2θ of  $8.8 \pm 0.2^\circ$ ,  $9.4 \pm 0.2^\circ$  and  $9.8 \pm 0.2^\circ$ , the diffraction line at  $2\theta=8.8 \pm 0.2^\circ$  being most intense, the two diffraction lines at  $9.4 \pm 0.2^\circ$  and  $9.8 \pm$

0.2° being at least 0.2 times as intense as the diffraction line at  $2\theta=8.8 \pm 0.2^\circ$ .

33. (New) The adduct according to claim 22 in spheroidal particle form.

34. (New) The adduct according to claim 22 having a DSC profile wherein the adduct has a highest melting Temperature ( $T_m$ ) peak lower than 107°C, and the adduct has an associated fusion enthalpy ( $\Delta H$ ) lower than 103 J/g.

35. (New) The adduct according to claim 22, further comprising at least one electron donor compound selected from an ester, an ether, an amine, a silane, and a ketone.

36. (New) A catalyst component for polymerizing olefins comprising a product of a reaction between a halogenating agent and an adduct comprising  $MgCl_2$ , an alcohol ROH present in a molar ratio with  $MgCl_2$  defined by the formula  $MgCl_2 \cdot m(ROH)$  in which m is a number from 0.5 to 6 and R is a C1-C10 hydrocarbon group, and a compound containing a transition metal M selected from the Groups 3 to 11 or the lanthanide or actinide groups of the Periodic Table of the Elements (new IUPAC version) in an amount such as to give a weight of transition metal M atoms lower than 10% based on the total weight of the adduct.

37. (New) The catalyst component according to claim 36, wherein m is from 0.5 to 1.5.

38. (New) The catalyst component according to claim 37, wherein the adduct is reacted with a halogenating compound having a reducing activity.

39. (New) The catalyst component according to claim 38, wherein the halogenating compound having a reducing activity is an aluminium compound of formula  $AlR_{3-z}X_z$ , wherein R is a C1-C15 hydrocarbon alkyl radical; X is halogen; and z is a number  $0 < z < 3$ .

40. (New) A catalyst for polymerizing olefins comprising a product of a reaction between a catalyst component comprising an aluminium alkyl compound, and a product of a reaction between a halogenating agent and an adduct comprising  $MgCl_2$ , an alcohol ROH present in a molar ratio with  $MgCl_2$  defined by the formula  $MgCl_2 \cdot m(ROH)$  in which m is a number from 0.5 to 6 and R is a C1-C10 hydrocarbon group, and a compound containing a transition metal M selected from the Groups 3 to 11 or the lanthanide or actinide groups of the Periodic Table of the Elements (new IUPAC version) in an amount such as to give a weight of transition metal M atoms lower than 10% based on the total weight of the adduct.

41. (New) The catalyst for polymerizing olefins according to claim 40, wherein the aluminium alkyl compound has a formula of  $AlR_{3-z}X_z$ , wherein R is a C1-C15 hydrocarbon alkyl radical; X is halogen; and z is a number  $0 \leq z < 3$ .

42. (New) The catalyst for polymerizing olefins according to claim 41, wherein the aluminium alkyl compound is an Al-trialkyl compound.

43. (New) A process for polymerizing olefins of formula  $\text{CH}_2=\text{CHR}$ , wherein R is hydrogen or a hydrocarbon radical having 1-12 carbon atoms, carried out in presence of a catalyst comprising a product of a reaction between a catalyst component comprising a product of a reaction between a halogenating agent, an aluminium alkyl compound, and an adduct comprising  $\text{MgCl}_2$ , an alcohol  $\text{ROH}$  present in a molar ratio with  $\text{MgCl}_2$  defined by the formula  $\text{MgCl}_2 \cdot m(\text{ROH})$  in which m is a number from 0.5 to 6 and R is a C1-C10 hydrocarbon group, and a compound containing a transition metal M selected from the Groups 3 to 11 or the lanthanide or actinide groups of the Periodic Table of the Elements (new IUPAC version) in an amount such as to give a weight of transition metal M atoms lower than 10% based on the total weight of the adduct.

44. (New) The adduct according to claim 23, wherein s is 0 or 1.

U.S. Patent Application Serial No.: 10/362,695  
TC 5467

ATTACHMENT E

1. (previously presented): A catalyst component for the polymerization of olefins obtained by contacting:

- (i) a magnesium halide, or a suitable precursor of a magnesium halide;
- (ii) a monofunctional electron donor compound (MD) selected from aliphatic ethers, esters, amines or ketones, used in such amounts to have Mg/MD molar ratios of at least 50;
- (iii) a titanium compound of formula  $Ti(OR^I)_{n-y}X_y$ , where n is the valence of titanium, y is a number between 1 and n, X is halogen, and  $R^I$  is a C1-C15 hydrocarbon group; and optionally,
- (iv) an electron donor compound (ED).

2. (previously presented): The catalyst component according to claim 1 obtained by a procedure comprising contacting a magnesium halide, or a suitable precursor, with a titanium compound of formula  $Ti(OR^I)_{n-y}X_y$ , where n is the valence of titanium, y is a number between 1 and n, X is halogen, and  $R^I$  is a C1-C15 hydrocarbon group in the presence of a monofunctional electron donor compound (MD) selected from ethers or esters, in such amounts to have Mg/MD molar ratios of at least 50.

3. (previously presented): The catalyst component according to claim 1 in which the monofunctional electron donor compound (MD) is selected from esters of monocarboxylic aromatic or aliphatic acids.

4. (previously presented): The catalyst component according to claim 3 in which the monofunctional electron donor compound (MD) is selected from the group consisting of ethylbenzoate, n-butylbenzoate, p-methoxy ethylbenzoate, p-ethoxy ethylbenzoate, isobutylbenzoate, and ethyl p-toluate.
5. (previously presented): The catalyst component according to claim 1 in which the monofunctional electron donor compound (MD) is selected from aliphatic ethers.
6. (previously presented): The catalyst component according to claim 5 in which the monofunctional electron donor compound (MD) is tetrahydrofuran.
7. (previously presented): The catalyst component according to claim 1 in which the Mg/MD molar ratio is higher than 60.
8. (previously presented): The catalyst component according to claim 7 in which the Mg/MD molar ratio is higher than 70.
9. (previously presented): The catalyst component according to claim 1 wherein the titanium compound is selected from the group consisting of  $TiCl_4$ ,  $TiCl_3$ , and Ti-haloalcoholates of formula  $Ti(OR)_{n-y}X_y$ , where n is the valence of titanium, y is a number between 1 and n-1, X is halogen and R is a hydrocarbon radical having from 1 to 10 carbon atoms.
10. (previously presented): The catalyst component

according to claim 1 which is obtained by contacting a titanium compound of formula  $Ti(OR^I)_{4-y}X_y$ , where  $y$  is a number between 1 and 4,  $X$  is halogen, and  $R^I$  is a C1-C15 hydrocarbon group, with an adduct of formula  $MgCl_2 \cdot pR^{II}OH$ , where  $p$  is a number between 0.1 and 6, and  $R^{II}$  is a hydrocarbon radical having 1-18 carbon atoms, and with a monofunctional electron donor compound (MD) selected from ethers, esters, amines or ketones, used in such amounts to have Mg/MD molar ratios of at least 50.

11. (previously presented): The catalyst component according to claim 10 in which the titanium compound is  $TiCl_4$ .

12. (previously presented): The catalyst component according to claim 1 further comprising an electron donor compound (ED), different from (MD).

13. (previously presented): The catalyst component according to claim 12 in which the (ED) compound is selected from the group consisting of diesters, diketones, diamines and diethers.

14. (previously presented): The catalyst component according to claim 13 in which the (ED) compound is selected from C<sub>1</sub>-C<sub>20</sub> alkyl or aryl esters of phthalic acids.

15. (previously presented): The catalyst component according to claim 14, wherein the esters of phtahlic acids are diethyl phthalate, di-n-propyl phthalate, di-n-butyl phthalate, di-n-pentyl phthalate, di-i-pentyl phthalate,

bis(2-ethylhexyl) phthalate, ethyl-isobutyl phthalate, ethyl-n-butyl phthalate, di-n-hexyl phthalate, or di-isobutylphthalate.

16. (withdrawn): A catalyst component for the polymerization of olefins comprising a titanium compound, a Mg-dihalide, a difunctional electron donor compound (ED) selected from diesters, diketones, diamines or diethers, and a monofunctional electron donor compound (MD) selected from ethers, esters, amines or ketones, wherein a molar ratio ED/MD is higher than 10.

17. (withdrawn): The catalyst component according to claim 16 in which the Mg-dihalide is MgCl<sub>2</sub> in active form.

18. (withdrawn): The catalyst component according to claim 16 in which the molar ratio ED/MD is higher than 15.

19. (withdrawn): The catalyst component according to claim 18 in which the molar ratio ED/MD is higher than 30.

20. (withdrawn): The catalyst component according to claim 16 in which the MD compound is present in amounts lower than 1% by weight with respect to the total weight of the solid catalyst components without solvent.

21. (withdrawn): The catalyst component according to claim 20 in which the MD compound is present in amounts lower than 0.5% by weight.

22. (previously presented): A catalyst for the polymerization of olefins CH<sub>2</sub>=CHR, in which R is hydrogen or

a hydrocarbyl radical with 1-12 carbon atoms, comprising the product of the reaction between:

- (i) a catalyst component obtained by contacting:
  - (a) a magnesium halide or a suitable precursor of a magnesium halide;
  - (b) a monofunctional electron donor compound (MD) selected from aliphatic ethers, esters, amines or ketones, used in such amounts to have Mg/MD molar ratios of at least 50;
  - (c) a titanium compound of formula  $Ti(OR^I)_{n-y}X_y$ , where n is the valence of titanium, y is a number between 1 and n, X is halogen, and  $R^I$  is a C1-C15 hydrocarbon group; and optionally,
  - (d) an electron donor compound (ED);
- (ii) an alkylaluminum compound; and optionally,
- (iii) at least one external electron-donor compounds.

23. (previously presented): The catalyst according to claim 22 in which the alkylaluminum compound is selected from trialkyl aluminum compounds.

24. (previously presented): The catalyst according to claim 22 in which the external electron-donor is selected from silicon compounds of formula  $R_a^5R_b^6Si(OR^7)_c$ , where a and b are integer from 0 to 2, c is an integer from 1 to 3 and the sum (a+b+c) is 4; and  $R^5$ ,  $R^6$ , and  $R^7$ , are alkyl, cycloalkyl or aryl radicals with 1-18 carbon atoms optionally containing heteroatoms.

25. (previously presented): A process comprising the (co)polymerization of olefins  $CH_2=CHR$ , in which R is hydrogen or a hydrocarbyl radical with 1-12 carbon atoms,

in the presence of a catalyst comprising the product of the reaction between:

- (i) a catalyst component obtained by contacting:
  - (a) a magnesium halide or a suitable precursor of a magnesium halide;
  - (b) a monofunctional electron donor compound (MD) selected from aliphatic ethers, esters, amines or ketones, used in such amounts to have Mg/MD molar ratios of at least 50;
  - (c) a titanium compound of formula  $Ti(OR^I)_{n-y}X_y$ , where n is the valence of titanium, y is a number between 1 and n, X is halogen, and  $R^I$  is a C1-C15 hydrocarbon group; and optionally,
  - (d) an electron donor compound (ED);
- (ii) an alkylaluminum compound; and optionally,
- (iii) at least one external electron-donor compound.

26. (withdrawn): A catalyst for the polymerization of olefins  $CH_2=CHR$ , in which R is hydrogen or a hydrocarbyl radical with 1-12 carbon atoms, comprising the product of the reaction between:

- (i) a catalyst component comprising a titanium compound, a Mg-dihalide, a difunctional electron donor compound (ED) selected from diesters, diketones, diamines or diethers, and a monofunctional electron donor compound (MD) selected from ethers, esters, amines or ketones, wherein a molar ratio ED/MD is higher than 10;
- (ii) an alkylaluminum compound; and optionally,
- (iii) at least one external electron-donor compounds.

27. (withdrawn): A process comprising the (co)polymerization of olefins  $\text{CH}_2=\text{CHR}$ , in which R is hydrogen or a hydrocarbyl radical with 1-12 carbon atoms, in the presence of a catalyst comprising the product of the reaction between:

- (i) a catalyst component comprising a titanium compound, a Mg-dihalide, a difunctional electron donor compound (ED) selected from diesters, diketones, diamines or diethers, and a monofunctional electron donor compound (MD) selected from ethers, esters, amines or ketones, wherein a molar ratio ED/MD is higher than 10;
- (ii) an alkylaluminum compound; and optionally,
- (iii) at least one external electron-donor compound.

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compound. A prima facie case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities.

"An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skill in the art to make a claimed compound, in the expectation that compounds similar in structure will have similar properties." See MPEP §2144 and §2144.08, paragraph II.A.4.(c).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

#### RESPONSE

Applicant respectfully traverses the rejection of claims 1-16.

First and foremost, Applicant notes the above-mentioned U.S. Patent Application has matured into U.S. Patent 7,098,164, the claims of which are submitted herein as Attachment B.

The doctrine of double patenting seeks to prevent the unjustified extension of patent exclusivity beyond the term of a patent. The public policy behind this doctrine is that:

The public should. . . be able to act on the assumption that upon the expiration of the patent it will be free to use not only the invention claimed in the patent but also modifications or variants which would have been obvious to those of ordinary skill in the art at the time the invention was made, taking into account the skill in the art and prior art other than the invention claim in the issued patent.

*In re Zickendraht*, 319 F.2d 225, 232, 138 USPQ 22, 27 (CCPA 1963) (Rich, J., concurring).

When a double patenting rejection is appropriate, it must be based either on statutory grounds or nonstatutory grounds. The

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ground of rejection employed depends upon the relationship of the inventions being claimed. Generally, a double patenting rejection is not permitted where the claimed subject matter is presented in a divisional application as a result of a restriction requirement made in a parent application under 35 U.S.C. 121.

Where the claims of an application are substantively the same as those of a first patent, they are barred under 35 U.S.C. 101 - the statutory basis for a double patenting rejection. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ...." Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957). Where the claims of an application are not the "same" as those of a first patent, but the grant of a patent with the claims in the application would unjustly extend the rights granted by the first patent, a double patenting rejection under nonstatutory grounds is proper.

In determining whether a proper basis exists to enter a double patenting rejection, the examiner must determine the following:

(A) Whether a double patenting rejection is prohibited by the third sentence of 35 U.S.C. 121 (see MPEP § 804.01; if such a prohibition applies, a double patenting rejection cannot be made);

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- (B) Whether a statutory basis exists; and
- (C) Whether a nonstatutory basis exists.

Domination and double patenting should not be confused. They are two separate issues. One patent or application "dominates" a second patent or application when the first patent or application has a broad or generic claim which fully encompasses or reads on an invention defined in a narrower or more specific claim in another patent or application. Domination by itself, i.e., in the absence of statutory or nonstatutory double patenting grounds, cannot support a double patenting rejection. *In re Kaplan*, 789 F.2d 1574, 1577-78, 229 USPQ 678, 681 (Fed. Cir. 1986); and *In re Sarrett*, 327 F.2d 1005, 1014-15, 140 USPQ 474, 482 (CCPA 1964). See MPEP § 804 II.

A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); and *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

In determining whether a nonstatutory basis exists for a double patenting rejection, the first question to be asked is - does any claim in the application define an invention that is anticipated by, or is merely an obvious variation of, an invention claimed in the

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patent? If the answer is yes, then an "obviousness-type" nonstatutory double patenting rejection may be appropriate. Obviousness-type double patenting requires rejection of an application claim when the claimed subject matter is not patentably distinct from the subject matter claimed in a commonly owned patent, or a non-commonly owned patent but subject to a joint research agreement as set forth in 35 U.S.C. 103(c)(2) and (3), when the issuance of a second patent would provide unjustified extension of the term of the right to exclude granted by a patent. See *Eli Lilly & Co. v. Barr Labs., Inc.*, 251 F.3d 955, 58 USPQ2d 1869 (Fed. Cir. 2001); *Ex parte Davis*, 56 USPQ2d 1434, 1435-36 (Bd. Pat. App. & Inter. 2000).

Since the analysis employed in an obviousness-type double patenting determination parallels the guidelines for a 35 U.S.C. 103(a) rejection, the factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103 are employed when making an obvious-type double patenting analysis. These factual inquiries are summarized as follows:

- (A) Determine the scope and content of a patent claim relative to a claim in the application at issue;
- (B) Determine the differences between the scope and content of the patent claim as determined in (A) and the claim in the application at issue;

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- (C) Determine the level of ordinary skill in the pertinent art; and
- (D) Evaluate any objective indicia of nonobviousness.

The conclusion of obviousness-type double patenting is made in light of these factual determinations.

Additionally, any obviousness-type double patenting rejection should make clear:

- (A) The differences between the inventions defined by the conflicting claims - a claim in the patent compared to a claim in the application; and
- (B) The reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent.

Moreover, when considering whether the invention defined in a claim of an application would have been an obvious variation of the invention defined in the claim of a patent, the disclosure of the patent may not be used as prior art. (Emphasis added) *General Foods Corp. v. Studiengesellschaft Kohle mbH*, 972 F.2d 1272, 1279, 23 USPQ2d 1839, 1846 (Fed. Cir. 1992).

With respect to the current rejection, currently pending claims 1-10 are directed towards catalyst components; claims 11-14 are directed towards a catalyst; and claims 15-16 are directed towards a

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process. All currently pending claims (i.e., claims 1-16) are submitted herewith as Attachment A.

With respect to U.S. Patent 7,098,164, claims 1-14 and 17-19 are directed towards a process; and claims 15-16 are directed towards a catalyst. As stated *supra*, claims 1-19 of U.S. Patent 7,098,164 are attached herewith as Attachment B.

Currently pending claims 1-10:

Claim 1 of the current application recites,

Catalyst components for polymerizing olefins comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium is in a valence state lower than 4.

Applicant believes none of claims 1-19 in U.S. Patent 7,098,164 recite the same, or an obvious variant, of currently pending claim 1. Additionally, currently pending claims 2-10 depend directly or indirectly from currently pending claim 1, and necessarily include all of the limitations therein.

As such, Applicant believes claims 1-10 are patentably distinct from claims 1-19 in U.S. Patent 7,098,164.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would

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have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

The Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A) (4) (c), in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent 7,098,164, and outlined: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the currently rejected claims are anticipated by, or would have been an obvious variation of, the invention defined in a claim or claims in the cited patent. See MPEP §804 (1).

Currently pending claims 11-14:

Claim 11 of the current application recites,

A catalyst for polymerizing olefins obtained by contacting (i) a catalyst component comprising Mg, Ti, Cl, and OR groups, where R is a C<sub>1</sub>-C<sub>10</sub> alkyl group optionally containing heteroatoms, or an ether having two or more ether groups, wherein a Mg/Ti weight ratio is lower than 3, a Cl/Ti weight ratio is from 1.5 to 6, an OR/Ti weight ratio is from 0.5 to 3.5 and at least 50% of the titanium

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is in a valence state lower than 4, with (ii) an organoaluminum compound.

Applicant believes none of claims 1-19 in U.S. Patent 7,098,164 recite the same, or an obvious variant, of currently pending claim 11. Additionally, currently pending claims 12-14 depend directly or indirectly from currently pending claim 11, and necessarily include all of the limitations therein.

As such, Applicant believes claims 11-14 are patentably distinct from claim 1-19 in U.S. Patent 7,098,164.

Moreover, Applicant traverses the current rejection since the Examiner has not made clear: (A) the differences between the inventions defined by the conflicting claims; and (B) the reasons why a person of ordinary skill in the art would conclude that the invention defined in the claim at issue is anticipated by, or would have been an obvious variation of, the invention defined in a claim in the patent. See MPEP §804 (1).

Additionally, the Examiner has recited MPEP § 2144 and § 2144.08, paragraph II (A)(4)(c) in the currently pending Office Action as basis for the double patenting rejection. However, the above recited sections relate to obviousness for patentability purposes when the document is considered prior art, and not to double patenting purposes when the document is not considered prior art. Thus, Applicant believes the Examiner has not used the correct standard for determining a double patenting rejection. See MPEP §804 (1).

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In particular, Applicant believes the Examiner has not properly compared the currently pending claims in the above-captioned application to the allowed claims in U.S. Patent 7,098,164, and